basic imagery interpretation report

Perm Aircraft Engine Plant Stalin 19 (S)

STRATEGIC WEAPONS INDUSTRIAL FACILITIES

25X1

USSR

25X1
25X1

INSTALLATION OR ACTIVITY NAME	COUNTRY
Perm Aircraft Engine Plant Stalin 19	UR

UTM COORDINATES	GEOGRAPHIC COORDINATES
NA	57-58-34N 056-15-14E

25X1

MAP REFERENCE

ACIC. USATC, Series 200, Sheet 0156-11, scale 1:200,000

LATEST IMAGERY USED	NEGATION DATE (If required)
	NA

25X1

ABSTRACT

1. This report updates two previous NPIC reports on Perm Aircraft Engine Plant Stalin 19 and substantially satisfies the basic reporting requirement for Plant 19. Activity observed at the plant since the information cutoff date for the most recent report, is discussed in the report. The information cutoff date for this report is 31 December 1979.

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2. A significant amount of construction occurred at the plant during the reporting period, resulting in an increase of 43,980 square meters of floorspace and 4.6 hectares of land area. This report includes a discussion of construction and production activity observed here and a delineation of the components and function of the collocated Solovyev Design Bureau. Also included are a location map, an annotated photograph, a table of mensural and chronological data, and a table of aircraft engine shipping container sightings.

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INTRODUCTION

3. This report updates two previous NPIC report[1,2] on Perm Aircraft Engine Plant Stalin 19 (Figure 1), discusses construction and production activity at Plant 19 and delineates the components and function of the collocated Solovyev Design Bureau. Because of numerous mensural and interpretational anomalies detected in the two previous reports and the extensive construction observed at Plant 19 during the reporting period, this report provides updated mensural data on all major buildings and structures at the plant. Additionally, some of the buildings were renumbered.

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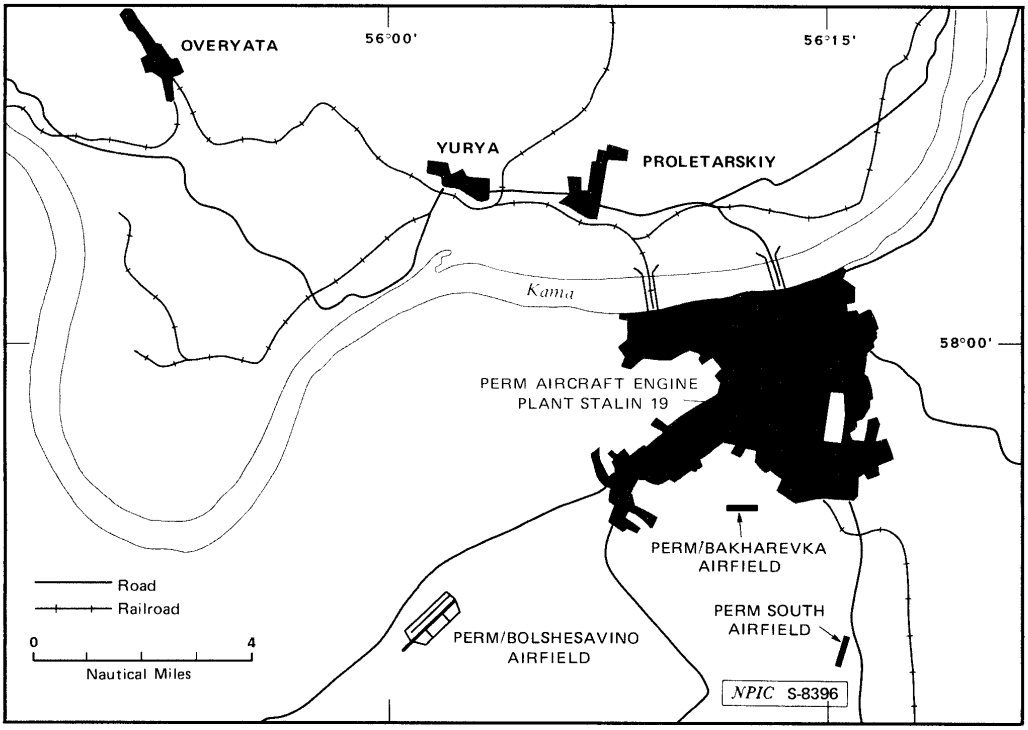

FIGURE 1. LOCATION OF PERM AIRCRAFT ENGINE PLANT STALIN 19, USSR

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BASIC DESCRIPTION

4. [redacted] Perm Aircraft Engine Plant Stalin 19 (Figure 2) comprises two collocated but functionally distinct areas: an aircraft engine production facility (referred to in this report as the main plant) and the Solovyev Aircraft Engine Design Bureau[1] (referred to as the design bureau). A brief description and a summary of construction activity in each area is provided in the following paragraphs. 25X1

Main Plant

Description

5. [redacted] The main plant (Figure 2) at Perm Aircraft Engine Plant Stalin 19 occupies 90 percent of the total plant area. It is secured by a wall and consists of 125 buildings and structures of which 109 are considered significant (items 1 through 109; Figure 3 and Table 1). As of 26 August 1979, the 125 buildings and structures in the main plant area consisted of a total of 436,638 square meters of floorspace. A functional breakdown of this floorspace is presented below.

Function	Floorspace (sq m)	Percent of Total Floorspace
Production	150,873	34
Engine test	31,533	7
Admin/engineering	98,741	23
Production support	104,246	24
General support	51,245	12
Total	436,638	100

Construction Activity

6. [redacted] A recalculation of the amount of floorspace contained in buildings in the main plant area [redacted] revealed a total of 404,469 square meters rather than the 402,112 square meters previously reported.[2] An additional 5,307 square meters of floorspace, under construction [redacted] has since been completed. Three small support buildings[1] with a total floorspace of 580 square meters were razed, and new construction resulted in the addition of 27,442 square meters of floorspace.

7. [redacted] Six buildings and structures, under construction [redacted] were completed during the reporting period. These were an administration/engineering section (item 37e) of an assembly building (item 37); an administration section (item 109b) of a transshipment building (item 109), which was not previously reported as being under construction; and a shipping section (item 109c), all three of which were completed [redacted] Also, a storage building (item 35) was partially complete [redacted] and a POL storage facility (item 34) was complete [redacted]

8. [redacted] New construction of buildings in the main plant area [redacted] resulted in the addition of 27,442 meters of usable floorspace. Significant buildings and structures constructed during this period included an engine test building (item 65) constructed [redacted] four shop buildings (items 15, 39, 68, and 69), two compressor buildings (items 16 and 51), two cooling towers (items 14 and 102), a water treatment building (item 18), a vehicle storage building (item 70), 11 storage buildings (items 10, 11, 17, 24, 32, 36, 38, 55, 91, 92, and 104), and two support buildings (items 19 and 47). Other construction consisted of the addition of new sections to three shop buildings (items 13d, 28b, and 99f) and an assembly building (item 95e), the enlargement of a storage building (item 35), the refurbishment of an assembly building (item 12), and the addition of one POL tank to a tank farm (item 1).

9. [redacted] a section (item 99h) of a shop building (item 99), a storage building (item 33), and a building of unidentified function (item 53) were still under construction. When this construction is complete, 1,444 square meters of floorspace will have been added to the main plant area.

Design Bureau

Description

10. [redacted] The design bureau area (Figure 2) of Perm Aircraft Engine Plant Stalin 19 is in the north end of the plant and occupies approximately 10 percent of the total plant area. The area is wall secured, separated from the main plant area by a combination of walls and fences, and consists of 21 significant buildings and structures (items 110 through 130, Figure 3 and Table 1). It has been identified as housing the design bureau headed by P.A. Solovyev (Soloviev)[1,3] and is considered to be one of the leading aeroengine research and experimental design bureaus in the Soviet Union.[1] Although several possible boundaries for the design bureau have been previously postulated,[1,2] recent photographic evidence suggests that the boundaries depicted in Figure 2 are correct.[3,4] The 21 buildings and structures located within the design bureau [redacted] account for a total floorspace of 106,073 square meters. A functional breakdown of this floorspace is presented below.

Function	Floorspace (sq m)	Percent of Total Floorspace
Production	17,817	17
Engine test	16,622	16
Admin/engineering	55,215	52
Production support	11,457	11
General support	4,962	4
Total	106,073	100

Construction Activity

11. [redacted] A recalculation of the floorspace of buildings in the design bureau area [redacted] shows a total of 94,262 square meters rather than the 93,449 square meters previously reported.[2] An additional 2,690 square meters of floorspace, under construction [redacted] has since been completed. Six small support buildings[1] with a total floorspace of 1,427 square meters were razed, and new construction resulted in the addition of 10,548 square meters of floorspace.

12. [redacted] New construction of buildings in the design bureau area [redacted] resulted in the addition of 10,548 square meters of usable floorspace. Significant construction

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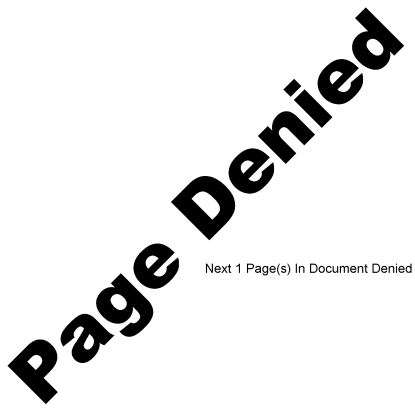

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Table 1
Structures at Perm Aircraft Engine Plant 19, USSR
(Items keyed to Figure 3)

Item	Description	Item Number in Doc ref 2	Item Number in Doc ref 1	Remarks
Main Plant				
1	POL tank farm	—	56	1 tank added; total volume 1,225 cu m
2	Pumphouse	—	—	Previously unnumbered
3	Vehicle stor bldg	—	—	Previously unnumbered
4	Cooling tower	—	55	4.8-m-diam fan; 4 fans
5	Stor bldg			Previously unnumbered
a	Stor sec	—	—	
b	Spt sec	—	—	
6	Firehouse	—	—	Previously unnumbered; height is for observation deck
7	Compressor bldg	31	—	Previously identified as support bldg; connected by elevated pipeline to item 9
8	Pumphouse	23	—	Previously identified as support bldg; PLG POL tank farm immediately west; rail transfer point immediately north
9	Admin/engr bldg	—	54	
a	Engr sect	—	54	4 stories; skylight on roof connects both admin sections
b	Admin sect	—	54	5 stories; floorspace includes small annex
c	Admin sect	—	54	5 stories
10	Stor bldg	—	—	
11	Stor bldg	—	—	
12	Assembly bldg	—	53	
a	Assembly sect	17a	53	Skylights are above roof
b	Admin/engr sect	17b	53	4 stories; 3 covered passageways connect this section to item 12c
c	Admin/engr sect	—	16	4 stories; previously reported as a separate bldg
d	Transshipment sect	—	17c	Section refurbished; rail through
13	Shop bldg			
a	Shop sect	18	—	Previously identified as spt bldg
b	Engr sect	18	—	2 stories
c	Shop sect	19	—	Previously reported as separate spt bldg
d	Stor sect	—	—	PUG; first observed
14	Cooling tower	—	—	First observed ucon; 2 fans
15	Shop bldg	—	—	First observed ucon
a	Shop sect	—	—	Connected by pipeline to item 16
b	Maint sect	—	—	
c	Engr sect	—	—	3 stories
16	Compressor bldg	—	—	First observed ucon; connected by elevated pipeline to item 15
17	Stor bldg	—	—	First observed ucon
18	Water treatment bldg	—	—	2 sludge ponds immediately south
19	Spt bldg	—	—	First observed ucon
20	Spt bldg	—	—	Previously unnumbered
21	Compressor bldg	—	—	Previously unnumbered
22	Transshipment bldg	—	52	Previously identified as utility bldg
a	Transshipment sect	—	52	Loading dock on south side
b	Admin sect	—	52	3 stories
23	Admin bldg	—	51	Previously identified as utility bldg
24	Stor bldg			
a	Assembly sect	—	50	
b	Shop sect	—	50c	
c	Engr sect	—	50a	3 stories; previously identified as 5 stories
26	Assembly bldg	—	49	
a	Assembly sect	—	49b	
b	Shop sect	—	49c	Previously identified as a 3-story admin/engr sect
c	Engr sect	—	49a	3 stories; previously identified as 4 stories
27	Stor bldg	—	—	Previously unnumbered
28	Shop bldg	—	48	
a	Shop sect	—	48	
b	Spt sect	—	—	Consists of 4 small annexes which were connected together during construction; heights vary from 1.0 to 4.4 m; first observed ucon
29	Spt bldg	—	—	Previously unnumbered
30	Control bldg	—	47	Supports electrical substation immediately north; previously reported as a shop bldg
31	Stor bldg	—	—	Previously unnumbered
32	Stor bldg	—	—	Quonset
33	Stor bldg	—	—	Ucon; quonset; first
34	POL stor fac	12	—	
a	Pumphouse	12b	—	
b	POL stor sec	12a	—	16 buried tanks
c	POL stor sec	12c	—	16 buried tanks
35	Stor bldg	11	—	Center section completed ; was 321 sq m; entire bldg enlarged beginning
36	Stor bldg	—	—	
37	Assembly bldg	30	46	
a	Assembly sect	30	46b	
b	Engr/shop sect	30c	—	2 stories
c	Admin/engr sect	30d	—	3 stories
d	Shop sect	30h	—	2 stories
e	Admin/engr sect	30b	46a	3 stories; 3d story added to entire section between ; approx half of the section was being expanded as of construction ; accounts for 830 sq m of floorspace
38	Stor bldg	—	—	Quonset
39	Shop bldg	—	—	
a	Shop sect	—	—	
b	Stor sect	—	—	
40	Spt bldg	—	45	
41	Shop bldg	—	44	
42	Cooling tower	—	43	2 fans
43	Shop bldg	—	42	Center section in 3 stories
44	Shop bldg	21	—	Previously identified as spt bldg; connected to item 46 by pipelines & conveyor
45	Spt bldg	—	—	Previously unnumbered
46	Foundry bldg	—	41	
a	Shop sect	22	—	
b	Foundry sect	—	41b	
c	Shop sect	—	41b	
d	Shop sect	—	41b	
e	Admin/engr sect	—	41a	2 stories; 1 small annex is 3 stories
47	Spt bldg	—	—	First observed ucon
48	Assembly bldg	—	—	First observed ucon
a	Assembly sect			
b	Admin/engr sect			
c	Engr sect			
49	Shop bldg			
a	Shop sect			
b	Shop spt sect			
c	Admin/engr sect			
50	Shop bldg			
a	Shop sect			
b	Admin/engr sect			
c	Admin sect			
d	Spt sect			
51	Compressor bldg			
52	Shop bldg			
a	Shop sect			
b	Shop sect			
c	Shop sect			
53	Bldg ucon			
54	Spt bldg			
55	Stor bldg			
56	Stor bldg			
57	Stor bldg			
58	Stor bldg			
59	Stor bldg			
a	Stor sect			
b	Stor sect			
60	Crane spt bldg			
61	Pumphouse			
62	POL farm			
63	Spt bldg			
64	Stor bldg			
65	Engine test bldg 5			
a	Test sect			
b	Shop sect			
c	Engr sect			
d	Exhaust tower			
e	Exhaust tower			
66	Shop bldg			
a	Shop sect			
b	Admin/engr sect			
67	Assembly/shop bldg			
a	Assembly sect			
b	Shop sect			
c	Shop sect			
d	Engr sect			
e	Admin/engr sect			
f	Spt sect			
68	Shop bldg			
a	Shop sect			
b	Enclosed passageway			
69	Shop bldg			
a	Shop sect			
b	Engr sect			

Item Number in Doc ref 2	Item Number in Doc ref 1	Remarks
—	40	
—	40a	Overall dimensions; floorspace for item 48c not included
—	40b	2 stories; previously identified as 3 stories
—	40a	3 stories
—	39	
—	39a	
—	39b	
—	39c	3 stories; previously identified as 4 stories
15	38	
—	38a	
15a	38b	2 stories
15b	—	2 stories
—	—	Not previously reported
—	—	First observed ucon
—	37	
—	37	
13b	—	Floorspace includes a
13a	—	
—	—	Footings only; floorspace projected for single-story bldg
—	—	Previously unnumbered
—	—	First observed ucon
—	—	Previously unnumbered
—	—	Previously unnumbered
—	—	Previously unnumbered
—	—	Previously unnumbered
—	—	
—	—	
9	—	
—	—	Previously unnumbered; supports POL farm (item 62) immediately north
—	36	3 buried tanks
—	—	Previously unnumbered
—	—	Previously unnumbered
—	—	
—	—	2 roof air intakes; floorspace includes a
—	—	
—	—	3 stories
—	—	Connected to test section
—	—	Connected to test section
—	34	
—	34b	
29a, 29b	34a	2 stories
—	33	
—	33b	West subsection
—	33b	Floorspace includes a annex
—	33d	2 stories
—	33c	West half is 2 stories; east half 3 stories
—	33a	4 stories; previously reported as 5 stories
—	—	Not previously reported
—	—	First observed ucon
—	—	2 stories
—	—	Connects to item 52
—	—	First observed ucon
—	—	2 stories
—	—	3 stories

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Table 1 (Continued)

Item	Description	Item Number in Doc ref 2	Item Number in Doc ref 1	Remarks
Main Plant (Cont.)				
70	Veh stor bldg	—	—	First observed ucon [redacted]
71	Admin/engr bldg	14	—	3 stories; floorspace does not include two 22 m-tall elevators, 1 at each end of the bldg
72	Maint bldg	—	—	Previously unnumbered
73	Heat & powerplant (Tess 6)	—	30	[redacted] coal yard is rail served
a	Generator sect	—	30	4 stacks on roof
b	Shop sect	—	30	2 stories
c	Engr sect	—	30	3 stories
d	Cooling section	—	30	[redacted]
e	Admin sect	—	30	5 stories
f	Coal prep sect	—	30	Adjacent to coal yard
74	Spt bldg	—	—	Previously unnumbered
75	Spt bldg	—	—	Previously unnumbered
76	Spt bldg	—	—	Previously unnumbered
77	Shop bldg	—	29	
78	Admin bldg	—	28	2 stories; previously identified as utility bldg
79	Shop bldg	—	—	Previously unnumbered
80	Pressure boost bldg	—	—	Boosts pressure of steam from item 73 to item 87; previously unnumbered
81	Shop bldg	3	—	Separately fence secured; previously identified as spt bldg
82	Control bldgs (3)	—	—	Support electrical substation immediately east; previously unnumbered; dimensions vary
83	Transformer repair bldg			[redacted]
a	Handling sect	—	35	Raised above sections b & c; drive in
b	Admin sect	—	35	
c	Shop sect	—	35	
84	Spt bldg	—	—	Previously unnumbered
85	POL tank farm	—	—	Previously unnumbered; contains 11 vertical POL tanks with capacity of [redacted]
86	Security building	—	—	Previously unnumbered
87	Admin bldg	2	—	3 stories
88	Veh stor bldg	—	—	4 bays; previously unnumbered
89	Engine test bldg 3	28	27	
a	Test sect	—	27	
b	Engr sect	—	27	3 stories
c—j	Cyl exhaust stacks	—	27	[redacted]
90	Cooling tower	—	26	4 fans
91	Stor bldg	—	26	4 fans
92	Stor bldg	—	—	
93	Compressor bldg	—	—	Previously unnumbered
94	Engine test bldg 4	—	25	
a	Test sect	—	25b	[redacted] includes 29 test cells each with primary & secondary air intakes
b	Engr sect	—	25a	5 stories; previously identified as 7 stories
95	Assembly bldg	—	18	
a	Assembly sect	—	18b	
b	Admin/engr sect	—	18c	4 stories
c	Admin/engr sect	—	18b	4 stories, previously identified as single story
d	Admin sect	—	18a	4 stories
e	Engr sect	—	18b	5 stories; 4 stories added to original single story sect; [redacted] added to original bldg
96	Assembly bldg	—	14	
a	Assembly sect	—	14a	Overall dimensions; item 96d protrudes into this sect
b	Engr sect	—	14c	4 stories; not annotated on graphic in ref doc 1
c	Shop sect	—	—	Previously unreported
d	Admin sect	—	14b	4 stories
97	Steam plant			
a	Boilerhouse	—	12	Associated [redacted] stack immediately east
b	Conveyor sect	—	12	Connects items 97a & 97c
c	Fuel prep sect	—	12	Crushes and prepares coal for use in boilerhouses (items 97a & 97c)
d	Boilerhouse	—	12	Associated [redacted] stack immediately south
98	Spt bldg	—	11	Previously identified as furnace bldg
99	Shop bldg	10	8,9	Addition of new section (item 99f) connected 2 previously separate bldgs
a	Spt sect	—	8	
b	Shop sect	—	8	Maximum height is 16.0 m
c	Maint sect	—	9	
d	Shop sect	—	9	
e	Admin/engr sect	10	—	3 stories
f	Admin/engr sect	—	—	4 stories; first observed [redacted]
g	Elevated walkway	—	—	Connects item 99f to item 100
h	Sect	—	—	Ucon; only footings seen; floorspace is projected for a single-story structure
100	Shop bldg	8	6	
a	Shop sect	8	6a	
b	Shop sect	6b		2 stories
c	Shop sect	—	—	Previously unreported
101	Cooling ponds (3)	—	—	Occupy 7,559 sq m; dimensions vary
102	Cooling tower	—	—	5 fans
103	Stor bldg	—	—	Previously unnumbered
104	Stor bldg	—	—	
105	Stor bldg	—	—	Previously unnumbered
106	Stor bldg	—	—	Previously unnumbered
107	Stor bldg	—	—	Previously unnumbered
108	Security/spt bldg	—	—	Previously unnumbered
109	Transshipment bldg	1	1	
a	Warehouse sect	1	1	2 traveling cranes immediately west
b	Admin sect	—	—	2 stories; not reported in ref doc 2
c	Shipping sect	1	1	
	Unnumbered bldgs (16)	—	—	Small utility bldgs; dimensions vary
Solovyev Design Bureau				
110	Spt bldg	—	—	
111	Engine test bldg 2	26, 27	23	
a	Engine test section	27	23	Floorspace includes 2 small 2-story annexes
b	Engr sect	—	23	3 stories
c	Exhaust tower	26	23	Connected to test sect by [redacted]
d	Exhaust tower	—	23	Replaced cylindrical exhaust stack
e	Cyl exhaust stack	26	23	[redacted]
f	Cyl exhaust stack	—	—	
112	Test support bldg	25	24	
113	Engine test bldg 1	24	22	
a	Engine test section	—	22a	2 roof air intakes
b	Admin/engr sect	—	22b	3 stories; previously identified as 5 stories
c	Shop sect	—	22a	
d	Cyl exhaust stack	24	—	[redacted]
e	Exhaust tower	24	—	[redacted]
f	Exhaust tower	24	—	Connects directly to exhaust port of test bldg
114	Engine test bldg 6	—	—	First observed ucon [redacted]
a	Engine test sect	—	—	2 roof air intakes
b	Admin/engr sect	—	—	2 stories
c	Engr sect	—	—	4 stories
d	Exhaust tower	—	—	[redacted]
e	Exhaust tower	—	—	Ucon; first observed ucon [redacted] will probably be identical to item 114d
f	Cyl exhaust stack	—	—	[redacted] height of stack & diam of duct could not be determined
g	Cyl exhaust stack	—	—	[redacted] height of stack & diam of duct could not be determined
115	Admin/engr bldg	—	20	5 stories
116	Water tower	—	19	[redacted]
117	Spt bldg	—	—	Previously unnumbered
118	Spt bldg	—	—	Mounded water tanks immediately east & west; previously unnumbered
119	Admin bldg	—	15,16,17	3 previously separate bldgs now attached
a	Admin sect	—	17	4 stories
b	Admin sect	—	16	2 stories
c	Admin sect	—	15	4 stories
d	Admin sect	—		Ucon; 7 stories; late stages of construction; floorspace includes a single-story annex which connects to item 119b; first observed [redacted]
120	Bldg	—	—	Ucon; only footings seen; first observed ucon [redacted] floorspace projected for a single-story bldg
121	Assembly bldg	—	13	
a	Assembly sect	—	13b	
b	Admin/engr sect	—	13a	5 stories
122	Shop bldg	—	—	First observed ucon [redacted]
a	Shop sect	—	—	
b	Shop sect	—	—	
123	Admin bldg	—	7	4 stories
a	Admin sect	—	4b	4 stories
b	Admin sect	—	4a	3 stories
c	Admin sect	—	7	
124	Shop bldg	—	5	
a	Shop sect	—	5b	
b	Admin/engr sect	—	5a	3 stories
c	Engr sect	—	5c	5 stories
d	Shop sect	—	5d	
125	Spt bldg	—	—	Previously unnumbered
126	Spt bldg	—	—	Previously unnumbered
127	Transshipment bldg	6	3	
a	Warehouse sect	—	3	
b	Shipping sect	—	3	
c	Admin sect	6	—	
128	Spt bldg	5	—	
129	Admin bldg	4a,4b	2	2 stories; floorspace includes 1 small 4-story section & 2 small single-story sections
130	Assembly shop bldg	20	21	
a	Assembly sect	—	21b	
b	Shop sect	—	21c	2 stories
c	Shop sect	20	—	2 stories
d	Admin/engr sect	—	21a	5 stories
e	Spt sect	—	21a	

during this period consisted of an engine test building (item 114) built [redacted] a shop building (item 122), and a support building (item 110). Additional construction consisted of the replacement of a cylindrical exhaust stack with an exhaust tower (item 111d) at engine test building 2 (item 111) and the addition of a cylindrical exhaust stack (item 111f) at the same building. Additionally, the shop section (item 130c) of an assembly/shop building (item 130), under construction on 13 December 1974, was completed [redacted], adding 2,690 square meters of floorspace to the building.

13. [redacted] Buildings and structures under construction [redacted] consisted of a seven-story administration section (item 119d) of an administration building (item 119), an exhaust tower (item 114e) associated with engine test building 6 (item 114), and a building of unidentified function (item 120). When complete, these buildings and structures will add 6,480 square meters of floorspace to the design bureau area.

Plant Enlargement

14. [redacted] The plant was enlarged on two separate occasions during the reporting period (Figure 3). The wall in the southeast area was moved approximately 400 meters to the southeast between [redacted] to allow for extensive new construction in the southeast corner of the plant. The wall in the north plant area was moved approximately 100 meters to the north [redacted] to allow for the construction of a new seven-story administration section of an existing administration building. These enlargements resulted in the addition of 4.6 hectares of land area, bringing the total land area of the plant to 109.4 hectares.

Production Activity

15. [redacted] Since 1969, at least ten basic aircraft engines plus variations of several others have been produced at Perm Aircraft Engine Plant Stalin 19.[1,2] [redacted] three engine types have remained in production, one new type entered series production, the production status of four types cannot be conclusively determined, and two types have been phased out. The following is a brief description of each engine type associated with Plant 19.

Engines in Production

a. ISOTOV TV2-117A—A free-turbine turboshaft engine used in coupled pairs in the MI-8 (HIP).[5,6]

b. ISOTOV TV3-117—An upgraded version of the TV2-117A used in coupled pairs in the MI-14 (HAZE) and MI-24 (HIND).[5,6] This is a new production item.[6]

c. SOLOVYEV D-25V—A single-shaft, turboshaft engine with a free-power turbine used in the MI-6 (HOOK) and MI-10 (HARKE).[5,6]

d. SOLOVYEV D-30 series—A dual-shaft turbofan with integral flow mixer and reverser. Following are the four basic models of the D-30:

1) D-30P used in the TU-134 (CRUSTY).

2) D-30K possibly used in some TU-154 (CARELESS). 25X1

3) D-30KP used in the IL-76 (CANDID). 25X1

4) D-30KU used in the IL-62m (CLASSIC).[5,6]

Engines Possibly in Production

a. IVCHENKO AI-20 series—A single-shaft turboprop engine. AI-20 series engines are also produced at Zaporozhye Aircraft Engine Plant 478 [redacted] The following are the two basic models of the AI-20 series: 25X1 25X1 25X1

1) AI-20K used in the IL-18 (COOT), AN-12 (CUB), and BE-12 (MAIL). 25X1

2) AI-20M used in the IL-18 (COOT) and IL-38 (MAY).[5,6]

b. IVCHENKO AI-24 series—A single-shaft turboprop engine. AI-24 series engines are also produced at Zaporozhye Aircraft Engine Plant 478. The following are the two basic models of the AI-24:

1) AI-24A used in the AN-24 (COKE). 25X1

2) AI-24T used in the AN-26 (CURL) and AN-30 (CLANK).[5,6] 25X1

c. IVCHENKO AI-25—A dual-shaft turbofan engine used in the YAK-40 (CODLING). AI-25 engines are also being produced at Zaporozhye Aircraft Engine Plant 478.[5,6] Two versions of the AI-25 are in production in Eastern Europe. They are the AI-25TL—in production at Praha Aircraft Engine Plant Jinonice Jan Sverma [redacted], Czechoslovakia, for use with the L-39—and the AI-25—in production at Reszow Aircraft Engine Plant [redacted], Poland, for use with the M-15.[6] 25X1 25X1 25X1 25X1 25X1

d. SOLOVYEV D-20P—A dual-shaft turbofan engine which is possibly being produced in small numbers as replacement engines for the TU-124 (COOKPOT).[5,6] 25X1

Engines Out of Production

a. MIKULIN RD-3M—A single-spool axial-flow turbojet engine used in the TU-16 (BADGER), M-4 (BISON), and TU-104 (CAMEL). The RD-3M is now being produced exclusively at Kazan Aircraft Engine Plant 16 [redacted] 25X1

b. SHVETSOV ASh-62—A nine-cylinder air-cooled radial engine used in the AN-2 (COLT) and LI-2 (CAB). The ASh-62 is now being produced exclusively, in the USSR, at Voronezh Aircraft Engine Plant 154 [redacted] 25X1 [redacted] A modified version of the ASh-62, designated ASZ-62 IR, is being produced at Kalisz Aircraft Engine Plant [redacted] Poland, for use with the AN-2 (COLT) and the M-18.[6] 25X1 25X1

16. [redacted] Photographic identification of aircraft engine shipping containers at Plant 19, the best indicator of plant activity, was difficult because of the similarities in size and configuration. The D-25V and 25X1

Table 2.
Shipping Containers Seen at
Perm Aircraft Engine Plant Stalin 19, USSR

[redacted] 25X1

Date*	TV 2-117A/TV 3-117	D-25V	D-30 series	AI-20/-30 series	AI-24 series	AI-25	D-20P	Unidentified**
[redacted] 25X1	70	42	150	46	13 (prob)	38 (prob)	6 (prob)	175
	121	26	152	19	61 (prob)	38 (prob)	12 (prob)	100
	114	49	178	62	50 (prob)	26 (prob)	8 (prob)	175
	90	18	156	48	46 (prob)	79 (prob)	17 (prob)	230
	126	22 (prob)	196	76 (prob)	38 (prob)	55 (prob)	15 (prob)	130
	78	91	257	153	61	74	16 (prob)	170
	***	80 (prob)	220 (prob)	***	***	***		450

*Selected coverages
**Count approximate
***Could not be determined

D-30 series containers were relatively easy to identify, while identification of the AI-25, D-20P, and AI-24 series containers was extremely difficult. Table 2 provides counts of shipping containers observed at Plant 19 on seven coverages from which at least probable identification could be made.

17. [redacted] Several production trends are apparent from the table. The major production items at Plant 19 are the D-30 series and TV2-117A/TV3-117 engines. Production of the D-30 series engines remained high throughout the reporting period but with a gradual decline in numbers. Production of the TV2-117A/TV3-117 engines varied widely, but production rates remained high. Production of the D-25V, AI-20/30 series, and AI-25 series engines decreased [redacted] The number of AI-24 series engine containers seen, however, varied greatly, with no trend readily apparent.

Engine Testing and Research and Development

18. [redacted] Engine test capability at Perm Aircraft Engine Plant Stalin 19 has increased significantly, both quantitatively and qualitatively. [redacted] The completion of engine test buildings 5 and 6 (items 65 and 114) significantly increased the capability of Plant 19 to test large numbers of engines in both the main plant and the design bureau areas. The addition of a square exhaust tower (item 111d) at engine test building 2 in the design bureau area in conjunction with the four square exhaust towers at buildings 5 and 6 (items 65d, 65e, 114d, and 114e) in the main plant and design bureau areas, respectively, suggests a qualitative capability increase in both areas. The square exhaust tower design has been associated with the testing of newer generation high-thrust, high-mass flow-engine systems,[8] including gas turbine engines. The addition of engine test building 65 (item 65) with its two square exhaust towers (items 65d and e) to the main plant area provides the capability of adequate testing of the D-30 gas turbine series engines currently in production at Plant 19. Engine research and development capabilities within the design bureau area have been similarly enhanced by the addition of the square towers. These modifications suggest that the Solovyev Design Bureau is now engaged in the design of a new gas turbine or similar engine (s) requiring an upgraded testing capability.

25X1
25X1
25X1

19. [redacted] One of the previous reports on Perm Aircraft Engine Plant Stalin 19[1] mentioned the possibility of missile engine testing and/or production at the plant. Since no missile engines or components have ever been identified at Plant 19, it seems doubtful that Plant 19 is, or has been, engaged in missile engine production and/or testing.

25X1
25X1
25X1

[redacted] 25X1

25X1

REFERENCES

25X1

MAPS OR CHARTS

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REQUIREMENT

COMIREX J02
Project 290037DJ

25X1

25X1

[redacted]